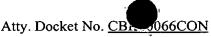




CLAIMS

- 1. A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, wherein the radiation-absorptive layer comprises at least one modified pigment product comprising a pigment having attached at least one organic ionic group and at least one amphiphilic counterion, wherein said amphiphilic counterion has a charge opposite to that of the organic ionic group.
- 2. The printing plate of claim 1, wherein the organic ionic group is an anionic group and wherein the amphiphilic counterion is a cationic amphiphilic counterion.
- 3. The printing plate of claim 2, wherein the anionic group comprises a carboxylate group or a sulfonate group.
- 4. The printing plate of claim 2, wherein the anionic group is an anion derived from a substituted or unsubstituted carboxyphenyl or a substituted or unsubstituted sulfophenyl group.
- 5. The printing plate of claim 2, wherein the cationic amphiphilic counterion comprises an ammonium group.
- 6. The printing plate of claim 2, wherein the cationic amphiphilic counterion is an ion represented by the formula R_4N^+ , wherein R is independently hydrogen, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkaryl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted alkenyl group.
- 7. The printing plate of claim 2, wherein the cationic amphiphilic counterion is a quaternary ammonium ion.
- 8. The printing plate of claim 2, wherein the cationic amphiphilic counterion is a benzyltrialkyl ammonium ion.



The printing plate of claim 2, wherein the anionic group comprises a carboxylate 9. group and the cationic amphiphilic counterion is a benzyltrialkyl ammonium ion.

- 36 -

- The printing plate of claim 1, wherein the organic ionic group is a cationic group and 10. wherein the amphiphilic counterion is an anionic amphiphilic counterion.
- The printing plate of claim 10, wherein the cationic group comprises an ammonium 11. group.
- The printing plate of claim 10, wherein the cationic group is $-C_6H_4-NC_5H_5^+$. 12.
- The printing plate of claim 10, wherein the cationic group is -C₅H₄+N-R, wherein R is 13. an alkyl group, an aryl group, an alkaryl group, an aralkyl group, or an alkenyl group.
- The printing plate of claim 10, wherein the anionic amphiphilic counterion is an ion 14. comprising at least one carboxylate group or sulfonate group.
- The printing plate of claim 10 wherein the anionic amphiphilic counterion is an alkyl 15. carboxylate ion.
- The printing plate of claim 1, wherein the radiation-absorptive layer further comprises 16. a polymer.
- 17. The printing plate of claim 16, wherein the polymer is a phenolic polymer.
- The printing plate of claim 17, wherein the phenolic polymer is a homopolymer or 18. copolymer of an hydroxystyrene or a phenol-formaldehyde polymer.
- 19. The printing plate of claim 16, wherein the polymer is an acrylic polymer.
- The printing plate of claim 19, wherein the acrylic polymer is a polymer comprising 20. acrylic acid, methacrylic acid, or salts thereof.



21. The printing plate of claim 1, wherein the substrate is a hydrophilic metal substrate.

- 37 -

- The printing plate of claim 1, wherein the substrate is aluminum or polyester. 22.
- A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, 23. wherein the radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product.
- The printing plate of claim 23, wherein the phenolic polymer is a homopolymer or 24. copolymer of an hydroxystyrene or a phenol-formaldehyde polymer.
- The printing plate of claim 23, wherein the modified pigment product comprises a 25. pigment having attached at least one organic group.
- The printing plate of claim 25, wherein the organic group comprises at least one ionic 26. group, at least one ionizable group, or a mixture thereof.
- The printing plate of claim 25, wherein the organic group comprises an anionic group. 27.
- The printing plate of claim 25, wherein the organic group comprises a carboxylic 28. group, a sulfonate group, or salts thereof.
- The printing plate of claim 25, wherein the organic group is a carboxyphenyl group, a 29. sulfophenyl group, or salts thereof.
- The printing plate of claim 25, wherein the organic group comprises a cationic group. 30.
- The printing plate of claim 25, wherein the organic group comprises an ammonium 31. group.
- The printing plate of claim 25, wherein the organic group is -C₅H₄⁺N-R with a 32. counterion, wherein R is an alkyl group or an aromatic group.

- 33. The printing plate of claim 32, wherein R is a methyl group or a benzyl group.
- 34. The printing plate of claim 23, wherein the substrate is a hydrophilic metal substrate.
- 35. The printing plate of claim 23, wherein the substrate is aluminum or polyester.
- 36. A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, wherein the radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[A]_pR, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, A represents an alkylene oxide group of from about 1 to about 12 carbons, p is an integer of from 1 to 500, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, wherein A can be the same or different when p is greater than 1.
- 37. The printing plate of claim 36, wherein A is -CH₂-CH₂-O-, -CH(CH₃)-CH₂-O, -CH₂-CH₂-CH₂-CH₂-O-, or combinations thereof.
- 38. The printing plate of claim 36, wherein the phenolic polymer is a homopolymer or copolymer of an hydroxystyrene or a phenol-formaldehyde polymer.
- 39. The printing plate of claim 36, wherein the substrate is a hydrophilic metal substrate.
- 40. The printing plate of claim 36, wherein the substrate is aluminum or polyester.
- 41. A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, wherein the radiation-absorptive layer comprises an acrylic polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[A]_pR, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, A represents an alkylene oxide group of from about 1 to about 12 carbons, p is an integer of from 1 to 500,

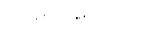




and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, wherein A can be the same or different when p is greater than 1.

- 39 -

- The printing plate of claim 41, wherein A is -CH₂-CH₂-O-, -CH(CH₃)-CH₂-O, 42. -CH₂-CH(CH₃)-O, -CH₂-CH₂-CH₂-O-, or combinations thereof.
- The printing plate of claim 41, wherein the acrylic polymer is a polymer comprising 43. acrylic acid, methacrylic acid, or salts thereof.
- The printing plate of claim 41, wherein the substrate is a hydrophilic metal substrate. 44.
- The printing plate of claim 41, wherein the substrate is aluminum or polyester. 45.
- A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, 46. wherein the radiation-absorptive layer comprises at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[Vinyl]R, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, Vinyl represents an acrylic or styrenic homo- or copolymer comprising repeating substituted or unsubstituted acrylic or styrene monomer units, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group.
- The printing plate of claim 46, wherein Vinyl is an acrylic or methacrylic acid homo-47. or copolymer, or salt thereof.
- The printing plate of claim 46, wherein Vinyl is an acrylic or methacrylic ester. 48.
- The printing plate of claim 46, wherein the radiation-absorptive layer further 49. comprises a polymer.
- The printing plate of claim 49, wherein the polymer is a phenolic polymer. 50..



- 51. The printing plate of claim 50, wherein the phenolic polymer is a homopolymer or copolymer of an hydroxystyrene or a phenol-formaldehyde polymer.
- 52. The printing plate of claim 49, wherein the polymer is an acrylic polymer.
- 53. The printing plate of claim 52, wherein the acrylic polymer is a polymer comprising acrylic acid, methacrylic acid, or salts thereof.
- 54. The printing plate of claim 46, wherein the substrate is a hydrophilic metal substrate.
- 55. The printing plate of claim 46, wherein the substrate is aluminum or polyester.
- 56. A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, wherein the radiation-absorptive layer comprises at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[EI]R, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, EI represents an alkyleneimine-based polymer or copolymer, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group.
- 57. The printing plate of claim 56, wherein EI is polyethyleimine or derivatives of polyethyleneimine.
- 58. The printing plate of claim 56, wherein the radiation-absorptive layer further comprises a polymer.
- 59. The printing plate of claim 58, wherein the polymer is a phenolic polymer.
- 60. The printing plate of claim 59, wherein the phenolic polymer is a homopolymer or copolymer of an hydroxystyrene or a phenol-formaldehyde polymer.
- 61. The printing plate of claim 58, wherein the polymer is an acrylic polymer.





- 62. The printing plate of claim 61, wherein the acrylic polymer is a polymer comprising acrylic acid, methacrylic acid, or salts thereof.
- The printing plate of claim 56, wherein the substrate is a hydrophilic metal substrate. 63.
- The printing plate of claim 56, wherein the substrate is aluminum or polyester. 64.
- A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, 65. wherein the radiation-absorptive layer comprises at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[SMA]R, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, SMA represents a styrenemaleic anhydride polymer or derivative, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group.
- 66. The printing plate of claim 65, wherein SMA is styrene-maleic anhydride or derivatives of styrene-maleic anhydride.
- The printing plate of claim 65, wherein the radiation-absorptive layer further 67. comprises a polymer.
- The printing plate of claim 67, wherein the polymer is a phenolic polymer. 68.
- The printing plate of claim 68, wherein the phenolic polymer is a homopolymer or 69. copolymer of an hydroxystyrene or a phenol-formaldehyde polymer.
- The printing plate of claim 67, wherein the polymer is an acrylic polymer. 70.
- 71. The printing plate of claim 70, wherein the acrylic polymer is a polymer comprising acrylic acid, methacrylic acid, or salts thereof.
- 72. The printing plate of claim 65, wherein the substrate is a hydrophilic metal substrate.

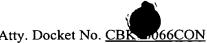




- The printing plate of claim 65, wherein the substrate is aluminum or polyester. 73.
- A printing plate comprising: a) a substrate and b) a radiation-absorptive layer, 74. wherein the radiation-absorptive layer comprises at least one modified pigment product comprising a pigment that is at least partially coated with one or more polymeric coatings.

- 42 -

- The printing plate of claim 74, wherein the polymeric coating comprises an acrylic or 75. styrenic polymer.
- 76. The printing plate of claim 74, wherein the radiation-absorptive layer further comprises a polymer.
- 77. The printing plate of claim 76, wherein the polymer is a phenolic polymer.
- The printing plate of claim 77, wherein the phenolic polymer is a homopolymer or 78. copolymer of an hydroxystyrene or a phenol-formaldehyde polymer.
- 79. The printing plate of claim 76, wherein the polymer is an acrylic polymer.
- 80. The printing plate of claim 79, wherein the acrylic polymer is a polymer comprising acrylic acid, methacrylic acid, or salts thereof.
- 81. The printing plate of claim 74, wherein the substrate is a hydrophilic metal substrate.
- The printing plate of claim 74, wherein the substrate is aluminum or polyester. 82.
- The printing plate of claim 1, wherein the radiation absorbed by the radiation-83. absorptive layer is infrared or near-infrared.
- The printing plate of claim 1, wherein the pigment is carbon black, graphite, vitreous 84. carbon, finely-divided carbon, activated carbon, activated charcoal, or mixtures thereof.
- 85. The printing plate of claim 1, wherein the pigment is carbon black.



The printing plate of claim 1, wherein the pigment comprises a white pigment, a black 86. pigment, a blue pigment, a brown pigment, a cyan pigment, a green pigment, a violet pigment, a magenta pigment, a red pigment, a yellow pigment, shades thereof, or combinations thereof.

- 43 -

- The printing plate of claim 17, wherein the organic group is a dissolution inhibitor of 87. the phenolic polymer.
- The printing plate of claim 17, wherein the amphiphilic counterion is a dissolution 88. inhibitor of the phenolic resin.
- The printing plate of claim 87, wherein the organic group is chemically transformed 89. by an IR laser.
- The printing plate of claim 88, wherein the amphiphilic counterion is chemically 90. transformed by an IR laser.
- A method of imaging the printing plate of claim 1, comprising selectively exposing: 91. the plate to a laser output in a pattern representing an image to selectively remove or chemically modify at least the radiation-absorptive layer.
- The method of claim 91, further comprising subjecting the plate to a solvent capable 92. of removing portions of the imaged layer(s).
- A flexographic printing plate comprising: a) a substrate, b) a UV curable layer, and c) 93. a radiation-absorptive layer, wherein the radiation-absorptive layer comprises at least one modified pigment product.
- The flexographic printing plate of claim 93, wherein the radiation-absorptive layer 94. further comprises a polymer.



95. A thermal transfer recording material comprising: a) an ink layer, b) a photothermal layer, and c) a support, wherein the photothermal layer comprises at least one modified pigment product.

- 44 -

- The thermal transfer recording material of claim 95, wherein the photothermal layer 96. further comprises a polymer.
- A proofing material comprising: a) a radiation transparent support, b) a radiation 97. curable layer, and c) a receiving layer, wherein the radiation curable layer comprises at least one modified pigment product.
- The proofing material of claim 97, wherein the radiation curable layer further 98. comprises a polymer.
- 99. A black matrix formed by applying a photosensitive coating on a clear substrate, exposing the coating imagewise, and developing and drying the coating, wherein the photosensitive coating comprises at least one modified pigment product comprising a pigment having attached at least one organic ionic group and at least one amphiphilic counterion, wherein said amphiphilic counterion has a charge opposite to that of the organic ionic group, and a solvent.
- 100. The black matrix of claim 99 further comprising a photosensitive resin.
- A black matrix formed by applying a photosensitive coating on a clear substrate, 101. exposing the coating imagewise, and developing and drying the coating, wherein the photosensitive coating comprises at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[A], R, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, A represents an alkylene oxide group of from about 1 to about 12 carbons, p is an integer of from 1 to 500, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, wherein A can be the same or different when p is greater than 1.

102.



- A black matrix formed by applying a photosensitive coating on a clear substrate, 103. exposing the coating imagewise, and developing and drying the coating, wherein the photosensitive coating comprises at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[Vinyl]R, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, Vinyl represents an acrylic or styrenic homo- or copolymer comprising repeating substituted or unsubstituted acrylic or styrene monomer units, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group.
- The black matrix of claim 103 further comprising a photosensitive resin. 104.
- 105. A black matrix formed by applying a photosensitive coating on a clear substrate, exposing the coating imagewise, and developing and drying the coating, wherein the photosensitive coating comprises at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[EI]R, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, EI represents an alkyleneimine-based polymer or copolymer, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group.
- The black matrix of claim 105 further comprising a photosensitive resin. 106.
- A black matrix formed by applying a photosensitive coating on a clear substrate, exposing the coating imagewise, and developing and drying the coating, wherein the photosensitive coating comprises at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula -X-Sp-[SMA]R, wherein X, which is directly attached to the pigment, represents an arylene, heteroarylene, or alkylene group, Sp represents a spacer group, SMA represents a styrenemaleic anhydride polymer or derivative, and R represents hydrogen, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group.

- 108. The black matrix of claim 107 further comprising a photosensitive resin.
- 109. A black matrix formed by applying a photosensitive coating on a clear substrate, exposing the coating imagewise, and developing and drying the coating, wherein the photosensitive coating comprises at least one modified pigment product comprising a pigment that is at least partially coated with one or more polymeric coatings.
- 110. The black matrix of claim 109 further comprising a photosensitive resin.